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Overview of Safety and Efficacy of Non-Viral Gene Transfer in Cartilage Tissue Engineering from the Worldview of Islam

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Abstract

This paper examines the safety and efficacy of non-viral gene transfer in cartilage tissue engineering (TE) from the worldview of Islam. The first clinical trial treating adenosine deaminase deficient patients conducted in 1990 has triggered the development of gene transfer technology. The potential of gene transfer is further explored in TE field with the hope that it could prosper the regenerative medicine application. However, ethical issues become important when it comes to application of new treatment modalities, primarily in gene transfer because of genetic modification influences the basis of life - the DNA. Besides ethical issue, the application of gene transfer in treating diseases also attract views from religious context. The questions on the techniques to administer the gene in human, social acceptance of genetically modified cell and adverse effects from it are still debatable and unresolved. Apart from that dilemma, both safety and efficacy issues are raised due to the scientific uncertainty and social perception of the technology. Despite countless number of encouraging findings and recommendations by the proponents of the technology, gene transfer is currently available only in the research setting. The established guidelines are used to complement and provide the necessary foundations in discussing the aspects involved in the incorporation of gene transfer with cartilage TE. Relevant Islamic input are identified and aligned to those particular guidelines. It is hoped that the integration of Islamic inputs in the existing guidelines could suggest the safest approach in treating cartilage degenerative disease through gene transfer and TE.



Keywords

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